Some FHCAL studies

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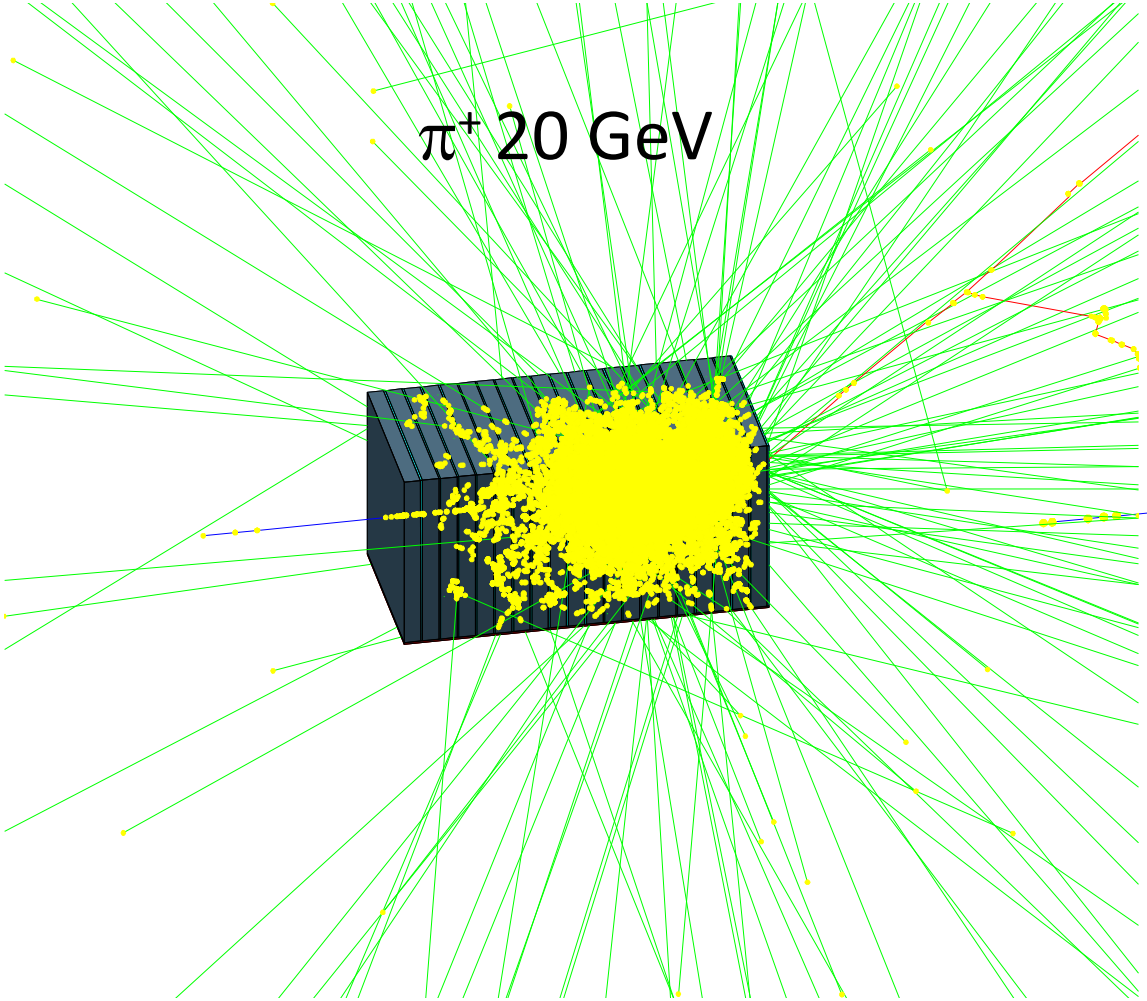
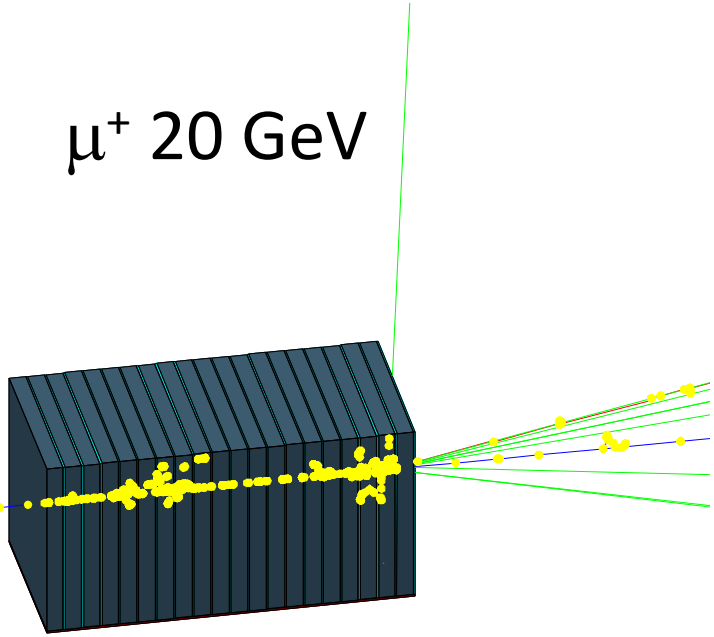
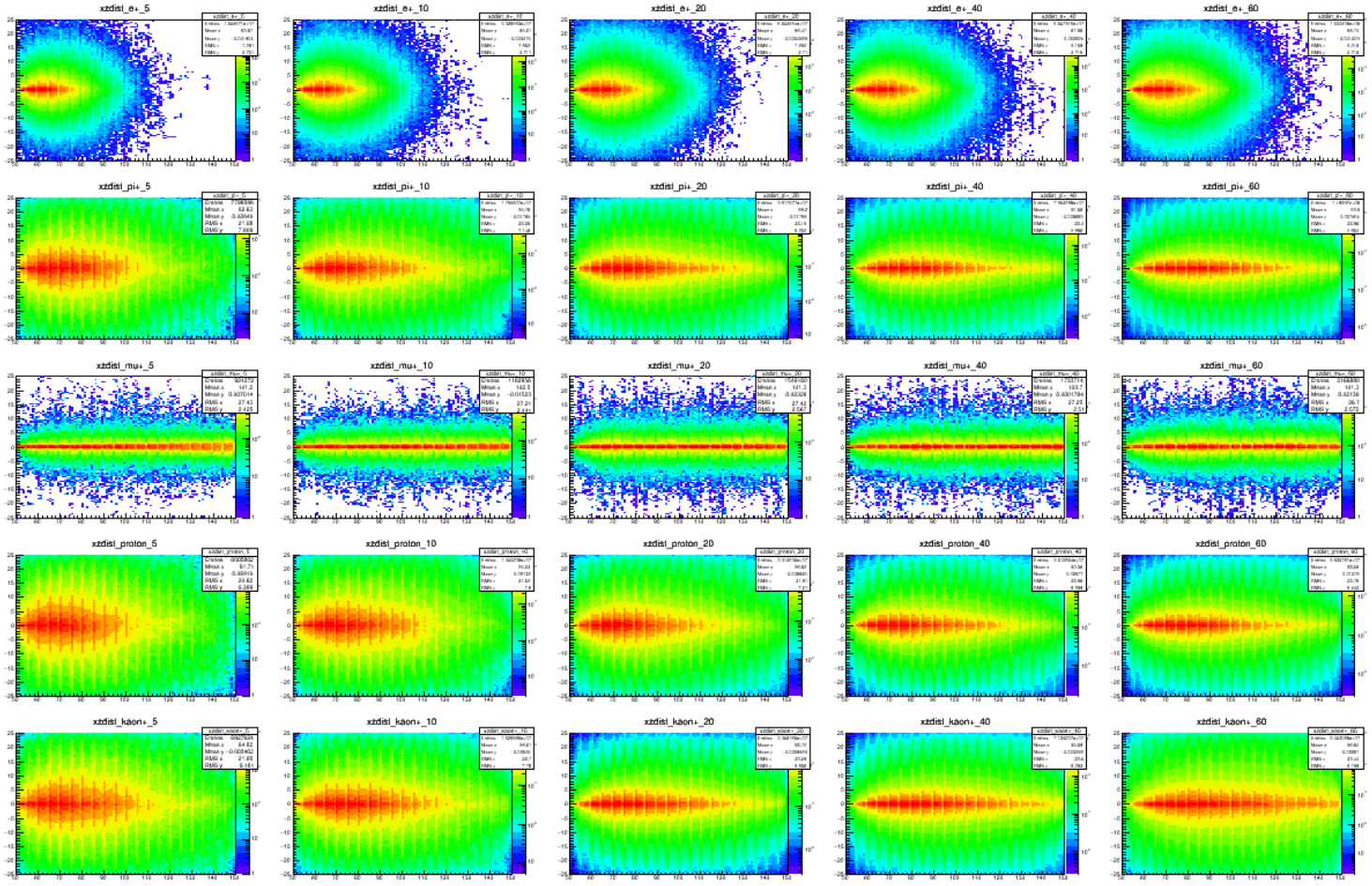
Sample HCAL block study





Simple
4.5cm Fe + 0.5 cm Scintillator
HCAL block
50cm x 50cm x 100 cm (20 layers)

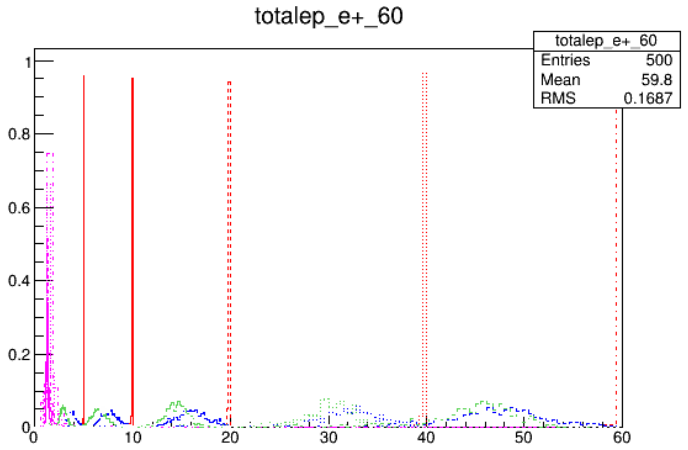
Shower profiles (hits from DSTReader)

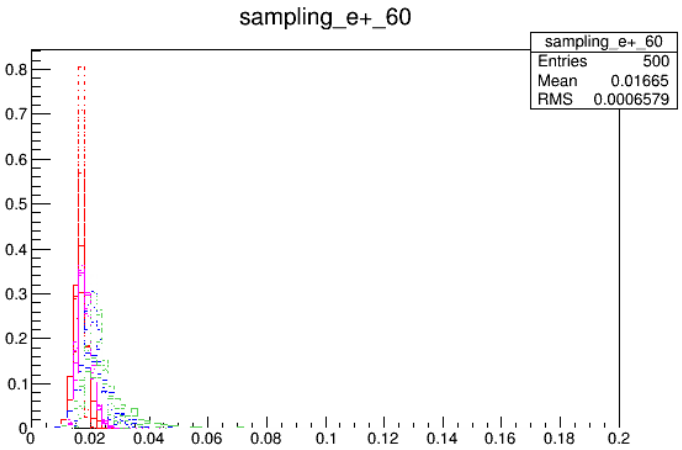


Energy deposits and sampling

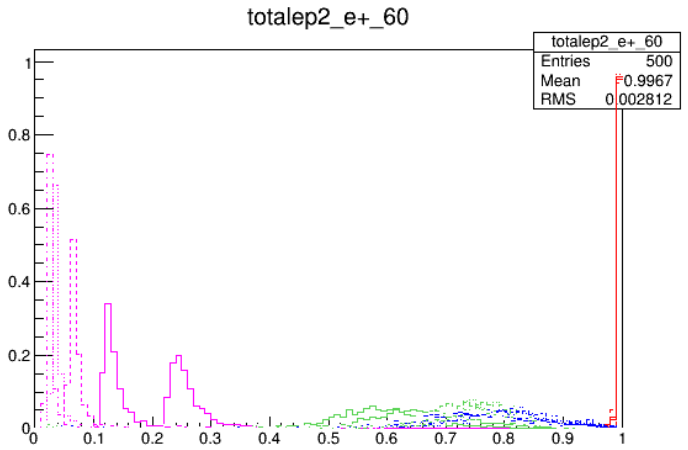
Color coding:
Electrons – red
Pions – blue
Muons – magenta
Protons – green
Electrons fully contained,
pions and protons ~ 60-80% contained
Sampling fractions very similar but widening distributions with increasing energy

Total energy deposited



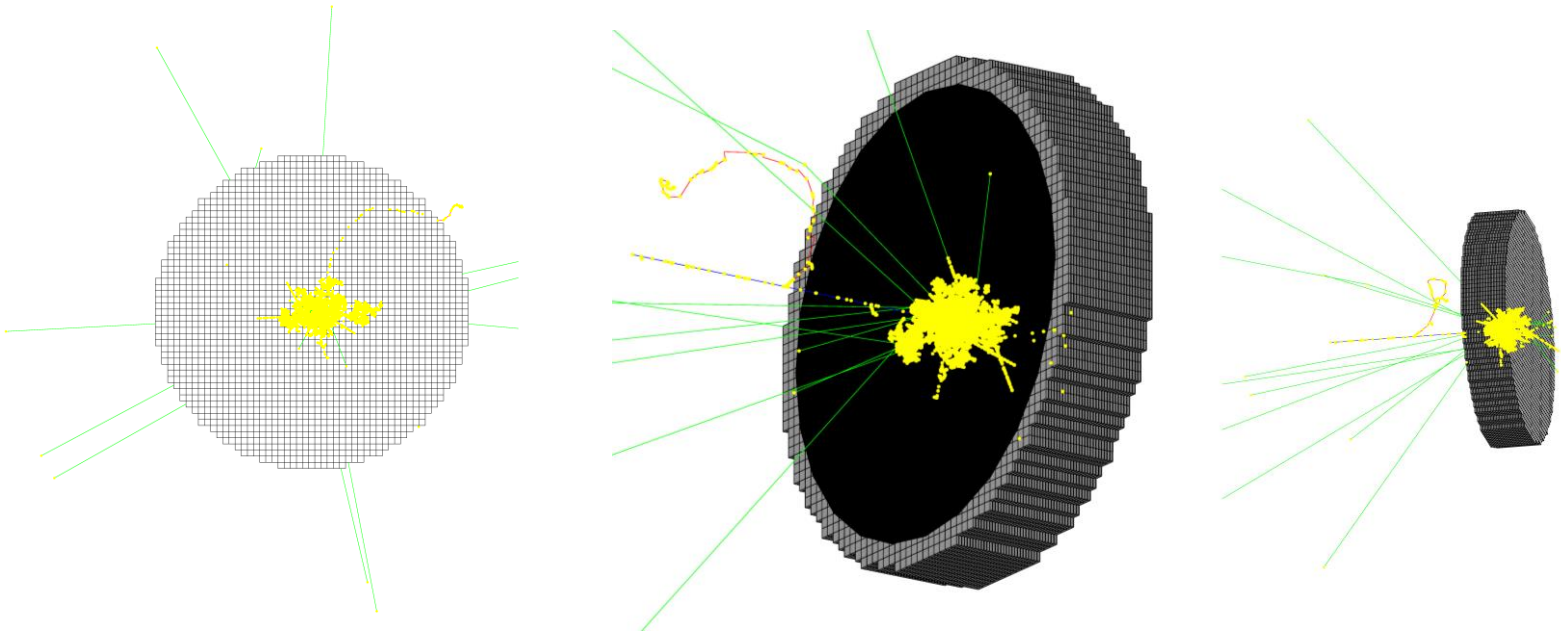


Total energy deposited in Scintillator / total energy deposited in Fe+Scintillator

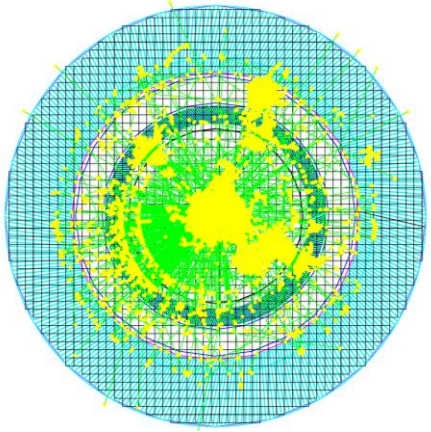


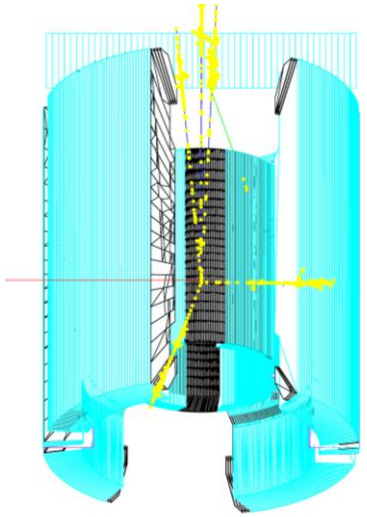
Total energy deposited / actual energy

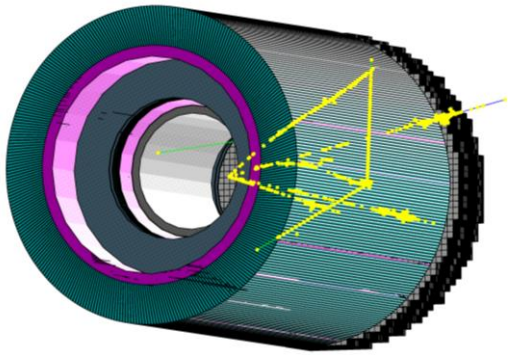
New HFCAL

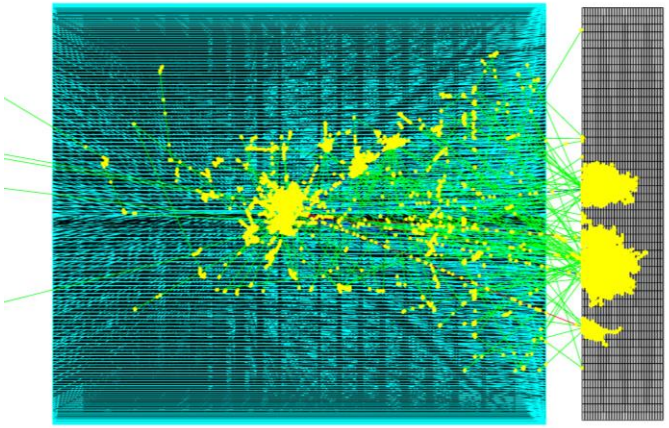


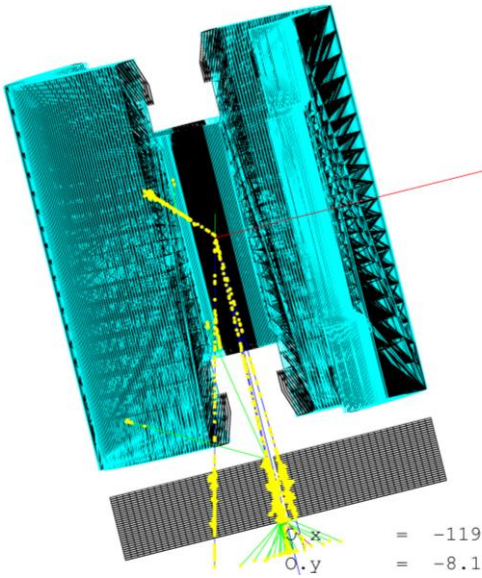
Some FHCAL event displays

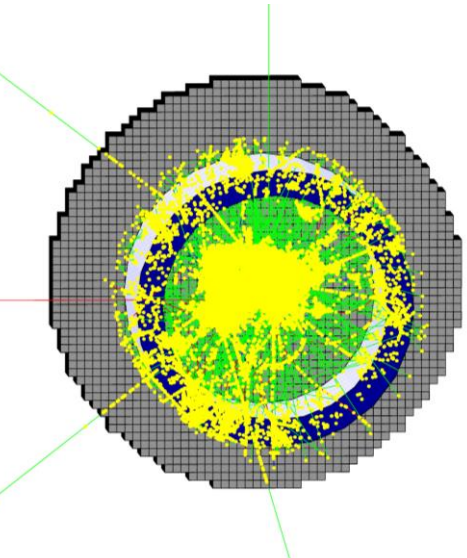


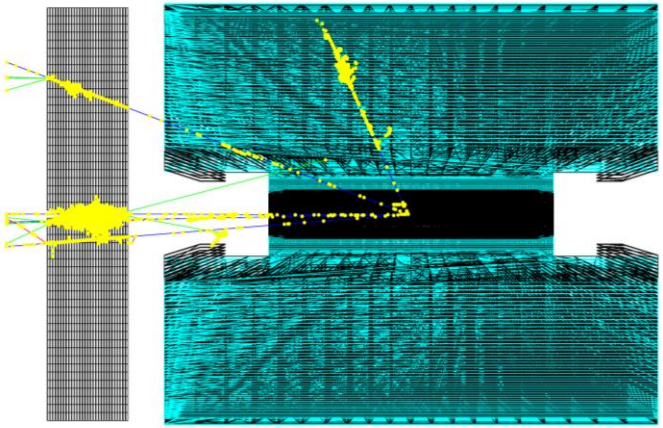


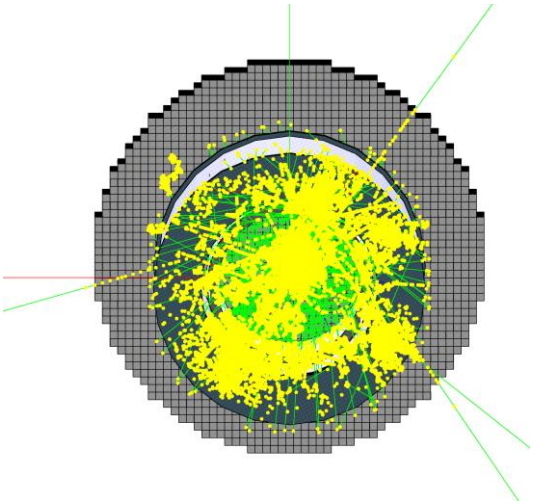


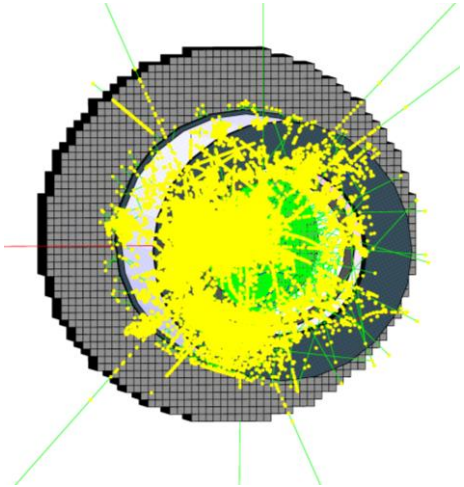


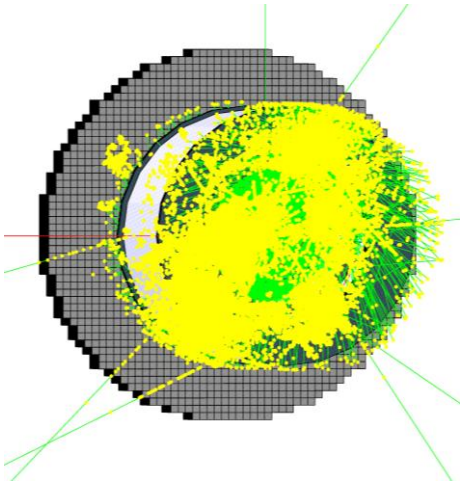












Summary

- FHCAL implemented by Nils and Joshua
- Some event displays on toy HCAL block and FHCAL prepared including some with most of sPHENIX in place
- Some memory issues running full sPHENIX+FHCAL with Pythia events?
- Start studying properties of FHCAL more closely for and help prepare the corresponding software